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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/825,363

04/16/2004

Han Sang Lee

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02/27/2009

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EXAMINER

WALTHALL, ALLISON N

ART UNIT

PAPER NUMBER

2629

MAIL DATE

DELIVERY MODE

02/27/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<i>Office Action Summary</i>	Application No.	Applicant(s)	
	10/825,363	LEE ET AL.	
	Examiner	Art Unit	
	ALLISON WALTHALL	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2008.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-11 and 13-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-11 and 13-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>5/14/2008</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/6/2008 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7-9 and 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. The term "about" in claims 7-9 and 16-18 is a relative term which renders the claim indefinite. The term "about" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 11, 13, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Naito (US Patent 6,462,735).

As to claim 11, Naito discloses a method of driving an electro-luminescence display device (see column 17, lines 16-23) including R, G and B cells having different light-emission efficiencies (see figure 3 and column 9, lines 48-53), the method comprising:

receiving Red, Green, and Blue N-bit (e.g., 8 bits) digital data signals (see column 8, lines 65-67);

converting the Red, Green, and Blue N-bit digital data signal having a same gray scale value into Red, Green, and Blue M-bit (e.g., 9 bit or 10 bit) digital data signals respectively, wherein each of N and M is an integer, M (e.g., 9 or 10) is greater than N (e.g., 8) (see column 8, line 63-column 9, line 5) and gray scale values of the Red, Green, and Blue M-bit digital data signals are different from each other (i.e. see figure 4—when a luminance of 128 is input for R, G, and B, the R, G, and B, output values on the V-T curves are different from each other);

converting the Red, Green, and Blue M-bit digital data signals into Red, Green, and Blue analog data signals, respectively (i.e. D/A converter); and

applying the Red, Green, and Blue analog data signals to respective Red, Green, and Blue pixels (see column 8, lines 52-57).

As to claim 13, Naito teaches wherein the gray scale value of the Red M-bit digital data signal is greater than the gray scale values of the Green and Blue digital data signals (see figure 4—the R curve is the uppermost curve, so at an input level of 128, the output gray scale value, DATA OUT, of red is larger than that of blue or green).

As to claim 14, Naito teaches wherein the gray scale number of the Green M-bit digital data signal is greater than the gray scale number of the Blue digital data signal (see Fig. 4).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 5-10, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naito in view of Kang (US Publication 2002/0063666).

As to claim 1, Naito discloses an electro-luminescence display device (see column 17, lines 16-23) comprising: R, G and B cells having different light-emission efficiencies (see figure 3 and column 9, lines 48-53);

a data converter (210 figure 1) having a look-up table (see column 11, lines 16-23) inputted with a N-bit (e.g., 8 bit) digital data signals having a same gray scale value (i.e. one of 0-255 is input),

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the data converter converting the Red, Green, and Blue N-bit digital data signal into Red, Green, and Blue M-bit (e.g., 9 bit or 10 bit) digital data signals respectively, wherein each of N and M is an integer and M (e.g., 9 or 10) is greater than N (e.g., 8) (see col.10, lines 15-22); and

gray scale values of the Red, Green, and Blue M-bit digital data signals are different from each other (i.e. see figure 4—when a luminance of 128 is input for R, G, and B, the R, G, and B, output values on the V-T curves are different from each other)

converting the Red, Green, and Blue M-bit digital data signals into Red, Green, and Blue analog data signals (D/A converter 260), respectively; and

a data driving circuit (300) transferring the Red, Green, and Blue analog data signals to respective Red, Green, and Blue pixels (see column 8, lines 52-57).

Naito does not specifically mention a gamma voltage generator generating a plurality of gamma voltages. Kang teaches a gamma voltage generator (164) generating a plurality of gamma voltages (see [0077-0079]). It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the gamma voltage generator of Kang in the device of Naito to improve display quality.

As to claim 2, Kang teaches a timing controller (162) outputting Red, Green, and Blue N-bit digital data signals to a data converter (167) (see [0076 and 0079]).

As to claim 3, Kang teaches the data driving circuit (e.g., 83, 84) includes the gamma voltage generator.

Claims 5 and 6 are analyzed similar to claims 13 and 14 above.

As to claim 7, Naito teaches wherein the Red analog video signal applied to the respective pixel has a voltage level ranged in about 0V to about 5V (Fig 3 and see col. 10, lines 50-52).

As to claim 8, Naito teaches wherein the Green analog video signal applied to the respective pixel has a voltage level ranged in about 0V to about 2.5V (see Fig. 3 and col. 10, lines 50-52).

As to claim 9, Naito teaches wherein the Blue analog video signal applied to the respective pixel has a voltage level ranged in about 0V to about 1.9V (see Fig. 3 and col. 10, lines 50-52).

As to claim 10, Naito teaches an electroluminescence display (see column 17, lines 16-23), thus it is obvious each of the pixels is an electro-luminescence cell.

As to claim 15, Kang teaches generating a plurality of different gamma voltages using a gamma voltage generator.

As to claims 16-19, these claims are analyzed similar to claims 7-10, respectively.

Response to Arguments

9. Applicant's arguments filed 2/6/2008 have been fully considered but they are not persuasive.

Applicant argues on pages 6-7 regarding claims 1 and 11 that the cited references do not teach "converting the Red, Green, and Blue N-bit digital data signal having a same gray scale value into Red, Green, and Blue M-bit digital data signals, respectively... and gray scale values of the Red, Green, and Blue M-bit digital data

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signals are different from each other...". Figure 4 of Naito clearly teaches an 8 bit input gray scale value (DATA IN) which is converted to a 9 or 10 bit output gray scale value (DATA OUT) (see column 8 line 63- column 9 line 47). For an input gray scale value of 128 for example, the output gray scale value corresponds to the point on the V-T curve at an x axis value of 128. Since each V-T curve is different for R, G, and B, each output gray scale value will also be different. At an input of 128, the red output will be greater than the green and the green will be greater than the blue.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALLISON WALTHALL whose telephone number is (571)270-3571. The examiner can normally be reached on Mon - Fri 9:30-6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

anw
February 19, 2009

/Chanh Nguyen/
Supervisory Patent Examiner, Art
Unit 2629